December 18, 2013

Ms. Cecilia Tapia
Director
Superfund Division
United States Environmental Protection Agency
Region 7
11201 Renner Boulevard
Lenexa, Kansas 66219

RE: Bridgeton Landfill / OU-1 Coring (Phase 1B, 1C and 2) Investigation Work Plan and Health and Safety Plan

Dear Ms. Tapia:

On behalf of our client, Bridgeton Landfill, LLC (hereinafter Bridgeton Landfill), Feezor Engineering, Inc (FEI) hereby submits a revised version of the *Core Sampling Work Plan (Phases 1B, 1C, and 2)* and submits the *Core Sampling (Phases 1B, 1C, and 2)* H*ealth and Safety Plan.* This submittal is consistent with the United States Environmental Protection Agency's (USEPA) September 20, 2013, letter directing the investigation under the Additional Work provision of the Administrative Order on Consent for the West Lake OU-1 Superfund Site.

The *Core Sampling Work Plan (Phases 1B, 1C, and 2)* was revised based upon comments received by the USEPA on December 4th, 2013 and subsequent December 6th, 2013 conference call and December 12, 2013 meeting between Bridgeton Landfill, LLC and USEPA Region 7. Responses contained in the attached comment response and the *Core Sampling Work Plan (Phases 1B, 1C, and 2)* were prepared under the direction of a Missouri Professional Engineer (Daniel Feezor, P.E., MO P.E. Number E-30292). Technical contributors to these documents include P.J. Carey and Associates, P.C., Engineering Management Support, Inc., and Auxier and Associates, Inc.

Overview of Revised Work Plan

A Phase 1 GCPT investigation was recently conducted in the southern portion of Area 1. The purpose of the Phase 1 investigation was to provide initial field screening level data regarding the possible presence of RIM and to provide initial geotechnical data regarding subsurface conditions along potential alignments for the isolation/thermal barrier.

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Results obtained by the Phase 1 investigation are still being evaluated; however, initial review of the field data indicated that RIM may be present beneath the southwestern portion of Area 1 beneath the anticipated western portion of possible alignments for the isolation/thermal barrier. Furthermore, some of the GCPT soundings in the eastern portion of Area 1 encountered refusal at depths shallower than anticipated; therefore, it is unclear whether these borings actually reached the base of refuse. Therefore, although originally it was anticipated that the next step in the investigation would be a Phase 2 investigation to obtain specific data along the proposed alignment of an isolation/thermal barrier, based on initial review of the Phase 1 results, it is clear that additional investigation is necessary in order to select an appropriate alignment for an isolation/thermal barrier.

The included Work Plan describes the scope and procedures to be employed for the next phase (Phase 1B) of the investigation. In the interest of providing an overview of all anticipated work and to potentially accelerate the overall review time and minimize downtime between the various phases of work, this work plan also describes the anticipated scope of expected subsequent phases of the investigation (e.g., Phase 1C and Phase 2 investigations).

A schedule has been included for all phases of the investigation. While we have tried to compress this schedule were possible, consistent with USEPA's request, the primary time driver is the analytical time necessary for the radiological tests. Radiological analytical tests must be held in the lab for a minimum of 21 days to obtain a defensible radium-226 measurement. With preparation time, internal review and assembly of the data reports, 4-6 weeks is a reasonable turn-around-time for the laboratory. Therefore, the schedule includes six weeks for laboratory analyses and two weeks for data validation for each phase. Bridgeton Landfill will work with the laboratory to reduce the time to the degree possible, but must allow for appropriate time in order to achieve the required Method Detection Activities. In addition, Bridgeton Landfill will continue to work with USEPA to optimize the schedule wherever possible.

Thank you again for your cooperation in this matter. We look forward to working with you. If you have any questions, please feel free to contact me at (217) 483-3118 or Bridgeton Landfill's Environmental Manager Brian Power at (314) 744-8165.

Sincerely,

Daniel R. Feezor, P.E.
Feezor Engineering, Inc.
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Attachment: Core Sampling (Phase 1B, 1C and 2) Work
Core Sampling Health and Safety Plan

Response to USEPA December 4, 2013, Comments

This attachment will respond to the 35 comments included with the USEPA December 4th, 2013 letter with the proposed work plan revision.

1. Section 1.1.1 — Site Conditions (first paragraph): The definition of radiologically-impacted material (RIM) described by the referenced 5 picocuries per gram (pCi/g) above background level should indicate that this level is for radium or thorium isotopes (with the exception of Thorium-230 and Thorium-232 which are combined), and that the RIM threshold for uranium is 50 pCi/g plus background as defined in the Supplemental Feasibility Study.

Response: Section 1.1.1 has been revised to reflect this comment.

2. Section 1.2 — Goals of the Investigation: The bulleted list of goals for the Core Sampling investigation should also include a bullet stating, "Waste characterization for disposal." Sufficient sampling will need to be conducted during the Phase II coring investigation in order to characterize the waste for proper disposal during trenching activities.

Response: A bullet was added to section 1.2.4 that chemical characterization will be conducted on Investigation Derived Wastes.

3. Section 4.1 - Overview of Technique (second paragraph): This section should state the Auxier Procedure 3.3, as referenced here, is included in Appendix B to this work plan (per Section 4.8.1).

Response: These revisions have been included but please note all the Auxier procedures have been included into a single appendix (Appendix A.)

4. Section 4.1- Overview of Technique (second paragraph): If methods other than sonic drilling are used, please explain how differences in bore diameters and collection techniques will be accounted for. One of the goals of the Phase II coring investigation is to determine type of waste/subsurface material which will be encountered during trenching (i.e. rock, municipal solid waste, construction

and demolition waste, etc.). A sufficient diameter core will be needed to accomplish this.

Response: It is not envisioned any other coring technique will be used other than the sonic technology. If any other technology is desired due to field circumstances, the on-scene coordinator will be consulted as stated in Section 4.3.1.

5. Section 4.3.1 — Boring Technique (fifth and sixth paragraphs): The terms "fluid" and "liquid" which are used to describe the water to be used during sonic drilling should be replaced with the term "potable water" for clarity. (See also Section 5.1.2.3 on waste/water management.)

Response: Section 4.3.1 has been modified to define liquid as potable water.

6. Section 4.3.2 - Other Techniques: If there is a possibility that some cores would be collected by a geoprobe instead of a sonic drilling rig, this work plan must describe the conditions that define when "…this technique can be used successfully…" and demonstrate that the core material retrieved by the geoprobe and the sonic drilling rig would be equivalent. (See comment 3 above for other drilling methods in Section 4.1.)

Response: Please refer to the response for comment 4.

7. Section 4.4 -Boring Locations: Develop selection criteria for the number of bore hole locations for Phase II, pending approval by the EPA. Emphasis should be based on the goals listed in Section 1.2, pertaining to waste characterization, along with barrier wall placement, and verification of non-RIM areas south of the barrier wall.

Response: The included Work Plan describes the scope and procedures to be employed for the next phase (Phase 1B) of the investigation. In the interest of providing an overview of all anticipated work and to potentially accelerate the overall review time and minimize downtime between the various phases of work, this work plan also describes the anticipated scope of expected subsequent phases of the investigation (e.g., Phase 1C and Phase 2 investigations). The location of proposed sonic borings (Phase 1B), and the location of additional GCPT soundings or sonic borings are depicted within Figure 3. However, the Phase 2 boring locations are still uncertain, since the barrier alignment is presently unknown. Proposed Phase 2 boring locations will be proposed through an addendum to this Work Plan.

8. Section 4.6 - Equipment Preparation and Safety Training: This section mentions a Phase II Health and Safety Plan (HASP), but this document was not provided to the EPA or MDNR. While the EPA and MDNR do not approve HASPs, this document must be provided with the final work plan, including descriptions of any air monitoring. Analytical data from air monitoring conducted for the purpose of worker protection (e.g., on-site worker air filters) will be made available to the EPA and MDNR.

   In addition, due to the coring of landfill material in areas where the GCPT logs indicated elevated gamma counts, a perimeter air monitoring program for the Phase II coring activities must be implemented. This air monitoring program must be in place and operational prior to beginning coring work. This program should be structured as described in the enclosure, and results provided to the EPA and MDNR as they are collected. Perimeter locations should be selected to be protective of the closest residential areas. The revised Phase II Work Plan must fully describe this air monitoring program.

Response: A new section 5 has been included in the *Core Sampling Work Plan (Phases 1B, 1C, and 2)* which details the new Health and Safety Monitoring System (air monitoring) consistent with discussions with USEPA. In addition, the *Core Sampling (Phases 1B, 1C, and 2) Health and Safety Plan* is being submitted with this correspondence.

9. Section 4.6 - Equipment Preparation and Safety Training (paragraph 2, last sentence): Describe what type of dust suppression will be used if dust is generated. Rework paragraph to include precautions that dust will not be generated (check 1st work plan for language).

Response: The sonic driller confirmed that using liquid for the drilling process will eliminate dust from the drilling operation.

10. Section 4.7 - Borehole Sampling (first paragraph): Planned locations for the core samples must not be unilaterally skipped; the EPA must be consulted to determine how to proceed. By building the road network to grades that could accommodate the gamma cone penetrometer (GCPT) vehicle, it is expected that the sonic drill rig will be able access all GCPT points. Any offset must be agreed upon by all parties to determine the best alternate location. Additionally, in the second paragraph, a brief discussion is needed on prevention of cross-contamination between boring locations and reference to the appropriate decontamination procedures, if necessary.

Response: This section has been revised to reflect that no planned boring / sounding will be skipped.

11. Section 4.8.1- Borehole Gamma Logging: The work plan must address how data from the one inch NaI gamma probe will be correlated with the results of the GCPT instrument and the data from the remedial investigation, as those logs were collected using different instruments. This will allow direct comparison of the new gamma log data with existing gamma log data.

Response: Direct correlations are not possible. However, similar trends in elevated counts at similar depths should be observable. The radionuclide analytical testing should provide more guidance once it is obtained.

12. Section 4.8.2 - Soil Core Gamma Scanning: It is not clear why the data from the soil core gamma scanning would be averaged, how averaging would be done or how results from voids in the core recovery would be handled. This section should explain these issues. Define FSPM in the footnote as the Field Sampling Procedural Manual which was developed by New Jersey and is used as a reference by others. Explain why the FSPM is applicable.

Response: Section 4.8.2 has been modified to provide more explanation regarding this procedure.

13. Section 4.9 - Soil Sampling: Remaining material from the soil core should not be placed back into the borehole. The borehole should be abandoned, consistent with Phase I, and the remaining material should be containerized for characterization and proper disposal. Also, the language should be clarified to indicate that two randomly spaced samples from each boring will be collected along with samples from each elevated gamma reading (i.e., a boring with two elevated gamma readings would be sampled in a total of four locations). Clarify the number of radiologic samples collected when readings are found, as stated in Section 4.8.2.

Response: The boreholes will be completed by installing PVC pipes over the drilling tool and these PVC pipes will be left in place. Therefore, no abandonment is needed**.** Section 4.9 has been modified to include a discussion about radiological sampling.

14. Section 4.9 — Soil Sampling (second paragraph): Please clarify how the used PVC sleeve will be handled; will it be decontaminated or disposed of as waste? In

addition, the EPA requests that Republic collect grab air samples from the head space of at least three boreholes and provide the sample results to the EPA and MDNR. The purpose is to use the open bore holes to sample the source gas in order to identify the appropriate non-radiological air sampling for the trenching operations. The source gas should be analyzed for aldehydes, ammonia, reduced sulfur compounds, S02, VOCs, carboxylic acids, CO2, methane and O2. Please identify which boring locations will be used to collect source gas samples in the revised Phase II Work Plan for review and approval.

Response: As stated in comment response number 13, the boreholes will be completed by installing PVC pipes over the drilling tool and completing these PVC pipes in place. Therefore, no abandonment is needed**.** No headspace gas readings are proposed at this time. The Addendum for Phase 2 work will address any air sampling appropriate for barrier construction planning.

15. Section 4.10 - Sample Handling and Shipping (second paragraph): On the list of label identifiers, include a bullet for units (e.g., inches). The last bullet contains a discrepancy between centimeters and inches to denote sample depths.

Response: Section 4.10 has been modified to reflect this comment.

16. Section 4.11- Sampling Processing (last paragraph): Clarify how the weight information will be used - to determine moisture content? If so, it should include both the wet weight and dry weight. Please cite the appropriate ASTM method.

Response: Section 4.11 has been modified to include the Oak Ridge Laboratory Quality Assurance Program Manual which describes the testing to be conducted (included in Appendix B).

17. Section 4.12 — This section should identify the specific radium, thorium and uranium isotopes to be analyzed, and must identify the actual analytical methods to be used. The language "…using industry standard methods *such as*…" is insufficiently specific. The analytical list and methods should be consistent with sampling performed during the Remedial Investigation.

Response: A new table 1 has been included in Section 4.9 which references the methods and the Method Detection Activity.

18. Section 4.12.3 - Analytical methods: In order to meet EPA's off-site disposal rule requirements, the receiving facility (e.g., Roxana, IL) will need a list of analytes

before receiving the waste. An asbestos analysis should also be added. Conduct a complete set of isotopic elements and non- rad testing as was performed for the Remedial Investigation (RI). Include the chemical analysis for waste characterization and worker safety.

Response: Please refer to the response for comment 2. For the Investigation Derived Wastes – any necessary analytical testing will be conducted as dictated by the licensed disposal facilities.

19. Section 4.7 - Borehole Sampling: Consider converting some of the borings to piezometers to collect groundwater information to assist in characterizing the site for construction (e.g., water management). Proper abandonment/replacement of monitoring well D-14 can be accomplished during this investigation.

Response: At this time, no piezometers are considered. It may be necessary along the east side if it is determined the existing GCPT data was not sufficient. If piezometers are necessary, an addendum to this work plan will be submitted. Monitoring Well D-14 is outside the scope of this investigation.

20. Section 5 - Contamination Surveys and Decontamination Procedures (general comment): Clarify the term “Permitted area” used in this section. Does it refer to the radiation work permit (RWP)? Use abbreviations as appropriate using this language.

Response: This is now Section 7, and the text has been modified to explain these “Permitted Areas”.

21. Section 5.1.1.3 - Permitted Area Exit Survey - Equipment: Specify that scanning will be conducted for alpha, beta, and gamma activity (not just beta) with 44-9 probe. Clarify they are looking for removable contamination.

Response: This is now Section 7.1.1.3, and this section has been modified to address this comment.

22. Section 5.1.1.3 - Permitted Area Exit Survey - Equipment: Stay consistent with Phase I procedures regarding the frequency and sampling interval of wipe samples.

Response: This is now Section 7.1.1.3, and this section has been modified to address this comment.

23. Section 5.1.1.4 - Final Release Survey - Equipment, Table 2. pg 20: Provide more description concerning the relationship of the information contained in each column (i.e., limit column versus meter reading column). Make a reference that values were calculated from Appendix D, Procedure 2.3. Clarify meter reading with typical readings.

Response: This is now Section 7.1.1.4, and this section has been modified to address this comment. A reference to default efficiencies published by Ludlum Instruments has also been included.

24. Section 5.1.1.4 - Final Release Survey - Equipment, Table 2. pg 20: Reference the sources of information contained in Table 2.

Response: This is now Section 7.1.1.4, and this section has been modified to address this comment.

25. Section 5.1.2.1 — Dry Decontamination: Change this language to read "going from one 'boring location' to another," not "from one 'permitted area' to another 'permitted area"'.

Response: This is now Section 7.1.2.1, and this section has been modified to address this comment. As was done in the Phase 1 GCPT Project, the tool string was surveyed for radioactive contamination and decontaminated, if needed, between each sounding location. Similarly, in this Phase, the drill rig tool string will be surveyed for radiation and decontaminated as appropriate between boring locations.

26. Section 5.1.2.1 — Dry Decontamination: Use of the verb "attempt" is not appropriate. If the Table 2 limit is exceeded, either decontaminate the equipment or take it out of service.

Response: This is now Section 7.1.2.1, and this section has been modified to address this comment.

27. Section 6 —Reporting (paragraph 1): Clarify if separate reports will be written for Phase I and Phase II.

Response: This is now Section 9, and this section has been modified to state that there will be one stand alone report.

28. Section 6 - Reporting (paragraph 2): Include field data as an appendix (e.g., soil logs, soil screening, etc.). This appendix could be submitted in an electronic format.

Response: This is now Section 9, and this section has been modified to include what will be in the final report.

29. Section 7 — Anticipated Project Schedule: The EPA expects that the PRPs will look for and take advantage of any opportunities to accelerate this schedule, including doing tasks in parallel where possible.

Response: This is now Section 9, and the schedule has been included as Figure 4.

30. Appendices - Ensure all references are provided in the report. (e.g., quality assurance is referred to in Table 1. Analytical Methods/Quality Assurance Table, but a Quality Assurance Project Plan (QAPP) is not included).

Response: A new Section 8 – Quality Assurance has been added to address this comment.

31. Procedure 2.1, Section 3.2.2.7 - background: Include site-specific background response levels and location as a third column.

Response: Auxier and Associates, Inc. modified their procedures to address this comment.

32. Procedure 3.3, general - Add a procedure to address non-radiological sampling.

Response: Please see the response for comment #2.

33. Procedure 3.3, Section 4.3 - Update the procedure to indicate the sample is taken from the core itself, not from within the bore hole.

Response: Auxier and Associates, Inc. modified their procedures to address this comment.

34. Procedure 3.3. Section 4.4.3 — Update to reflect sonic drilling. Be aware sonic drilling may produce heat which could result in VOCs. The sample may volatilize out.

Response: No VOC analyses are proposed for the analytical testing so this comment is not relevant to the radiological testing program.

35. Figure 3 - Proposed Investigation - Update the map to include the latest GCPT results/data.

Response: Please see the Figure 2 within the Work Plan which summarizes the GCPT findings.